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The contribution of unclassified techniques to the offensive activity of judokas medalists in the category (-60 kg) at the 2004-2012 Olympic Games.

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Abstract

Objective: *This work aimed to test the impact of unclassified techniques, produced by creativity but not yet included in the official classifications, on the offensive activity of judokas medalists in the category (-60 kg).* **Materials and methods:** *The deferred observation covered the combats (n=62) of male medalists (3 Gold, 3 Silver, and 6 Bronze) took part in Athens 2004, Beijing 2008, and London 2012 Olympic Games. A comparison of the variables justifying offensive activity using classified and unclassified techniques was made.* **Results:** *The analysis of the results confirmed the predominant role of techniques unclassified in the offensive activity of these medalists thanks to their high frequencies, wider repertoires, better scores, and higher effectiveness.* **Conclusion:** *Their integration in the official classifications for solving complex technical and tactical problems would be desirable for high-level judo development.*

Keywords: Judo, Competition, Performance, Innovative action.

1. Introduction

Spectators present at the Olympic stadium in Mexico City on 20 October 1968 discovered a revolutionary high jump technique. Unlike the barrel roll, this technique first presented the athlete's back facing the bar. It allowed the American inventor Dick

Fosbury to win the gold medal and beat the Olympic record for this event. This major milestone in the history of athletics expresses the perfect illustration of creative capacity and its influence on athletic performance (Hristovski et al., 2011). Thus, sport as a complex context fosters creativity emergence, which has marked its development from a motor point of view. These gestures, fruits of exceptional imagination and executed during competitions by certain athletes, mark his technical history forever. Three essential conditions are necessary for any human motor production carried out within the framework of sporting activity to identify creativity: fluidity, flexibility, and originality (Bertsch, 1983). Its contribution allows solving problems, modeling performances, enrichment of the gesture culture, and increasing aesthetic attractiveness.

Judo contest is a complex set of situations. Their resolutions depend on an innovative choice in the lack of academic solutions. This innovation is a crucial and proven element, including victory (Vial et al., 1978; Flamand & Gibert, 1993). The grand champion Toshihiko Koga, a staunch supporter of creativity, proclaimed the new techniques' importance in his strategic approach to competition. For this outstanding competitor, the judoka must be "open-minded to adopt alternative approaches and other ways of solving problems" (Koga, 2008). A vision shared by several other champions whose career has been determined by their spectacular and original movements. Thus, the Soviet Shota Kahbarelli with his technique combining three movements; the Japanese Toshihiko Koga with his Kata-tsurei-komi-goshi; the French Angelo Parisi with his Morote-eri-seoi-nage; Japanese Shozo Fuji with his half Morote-seoi-nage; the Soviet Shota Chochosvilli with his Hiza-mae-ura-nage, and many others, are among those fighters who influence high-level judo (Inman, 2009). But Katsuhiko Kashiwasaki's invention executed at the 1972 Olympic Games remained to this day the amazing one of the judo world (Figure 1). Designated by Furiko-tomoe-nage for its execution in the form of a pendulum with a phase without support, this technical feat was a witness to its exceptional motor complexity (Kashiwasaki, 1995; Calmet, 2010).

Denomination and integration within official classifications were topical. Despite their proven effectiveness, to admit these new techniques by institutions - such as the International Judo Federation or Kodokan - was a long and complicated process. The judo history knew rare integrations (Ohlenkam, 1999; Daigo, 2005). The lack of consensus among experts further aggravated this situation. Yet, not being able to identify these techniques was problematic for all judo stakeholders involved in training, competition, and research. Besides, to rank few techniques among those observed during the 2008 Olympic Games as “undefined” because of the impossibility of identifying and naming them is a more than edifying example (Witkowski et al., 2012). Identifying these new techniques through the parts of the body involved in their execution was a possibility likely to solve this problem. To regroup under the name of Kokusai-shiai-waza (techniques of international competitions) was a proposal that would help their incorporation in the official classification. This term described all unclassified techniques used by judokas during the 2004 Olympic Games (Inman, 2005). So, with a designation as “rotten-waza”, Teddy Riner was not academic. The Sumi-gaeshi lateral or other was not the most appropriate proposal. Characterized lack of aestheticism of these techniques cannot justify such a designation (Charlot, 2015).

On a tactical level, creativity generated issues for the opponent but also solved those posed by the same opponent (Cadière, 2010). Because of its importance, it was one component of effective intelligence along with analytical and practical skills. The ensemble took part in the success of elite athletes (Granitto, 2001). As regards the relationship uniting technique and creation, they were always “understood through a dualistic thesis: the technique relates to conformity, expresses the change of efficient means in achieving recognized products; creation, on the contrary, is an abandon of a construction system, absence of constraint, absolute freedom” (Gaillard, 1991). Several studies on high-level judo have confirmed their presence (Sterkowicz & Maslej, 1999; Sterkowicz & Franchini, 2000; Calmet, 2005; Calmet, 2010; Ait Ali Yahia, 2014a). If authors had well shown their frequency, they did not take care to devote a particular analysis to them proving their impact on performance from a motor or decisional point of view.

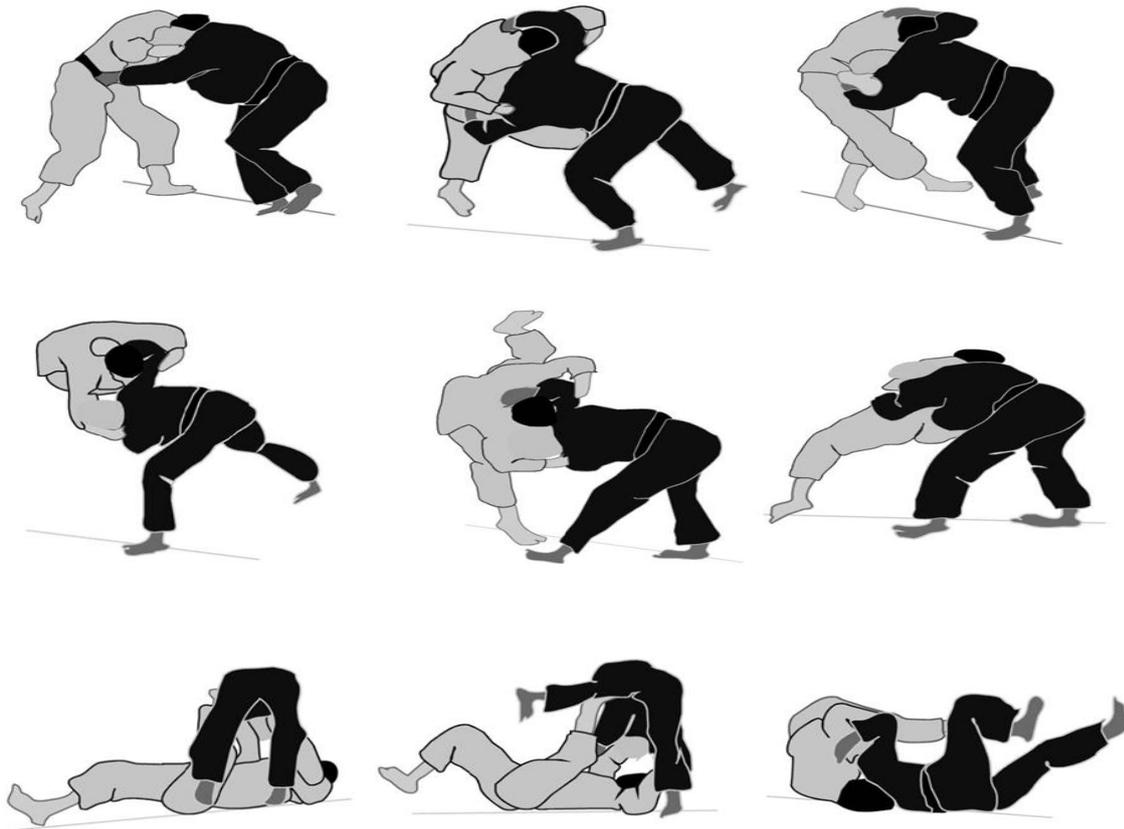


Figure 1: Illustration of Kashiwasaki's Furiko-tomoe-nage at the 1972 Munich Olympics (Calmet, 2010).

The technique is a fundamental factor in judo performance. Its appropriation by the high-level judoka requires several years of training. A high number of techniques taught are the principal reason for this long duration. International Judo Federation classification of 99 techniques included 66 Nage-waza techniques (throwing techniques), 29 Ne-waza techniques (ground techniques), and 4 Kinshi-waza techniques (prohibited techniques) (Ohlenkam, 1999; Daigo, 2005). Nage-waza comprised Te-waza (hand and arm techniques), Ashi-waza (foot and leg techniques), Koshi-waza (hip techniques), and Sutemi-waza (sacrifice techniques). It is risky to aspire to victories in a complex judo competition using only these classified techniques. So, integrating unclassified motor solutions is part of a logical adaptation to the current requirements. Irrational choice of unclassified technique does not put back in any way the classified technique's effectiveness. Thus, the unclassified technique is any motor action performed in competition, both standing and on the

ground, validated by the referees for its effectiveness, but not included in any of the various official classifications. For De Créé and Edmonds (2012), this technique can concern as well the case of a recent creation, as that imported from other combat sports. Determining the difference between an original technique and a technique variation that once exists is problematic even for the expert eye. Some books reported a multitude of confusion because of these erroneous judgments (Gil' Ad, 1999). Involving this unclassified motor action in the high-level judokas' performance remains an unsolved question to this day. Highlighting the offensive activity of these judokas allows us to learn more about its actual impact, including that of classified techniques. However, it is crucial to know what proper place held these unclassified techniques on the expert judokas' performances in a major competitive context? The analysis of these techniques is part of a technological approach (Bouthier, 2000). To observe a high-level competition could clarify the validity of their integration in this offensive device through their frequency, gestural repertoire, and effectiveness. Therefore, this study aimed to determine the share of these unclassified techniques and their impact on the offensive activity of Olympic medalists in the category (-60 kg) during Athens 2004, Beijing 2008, and London 2012 Olympics Games.

2. Material and method

Technical richness, combativeness, and effectiveness deployed in competitions by judokas (-60 kg) are among the elements justifying the choice of this light category for this study (Franchini & Sterkowicz, 2003). For data collection, the deferred observation method is appropriate because of the advantages it provides with dynamic and complex sports activities such as judo. The material of our observation was the video recording of the competition of 12 male medalists (3 gold, 3 silver, and 6 bronze) of the category (-60 kg) in Athens 2004, Beijing 2008, and London 2012 Olympic Games. The analysis of their combats (n=62) revealed 406 Nage-waza actions, including 158 classified actions and 248 unclassified actions. Except for the unclassified techniques' contribution to the offensive activity, this study not considered their structure whether original or variation. Yet, the frequency, repertoire, and score variables are interesting in this analysis but did not make a coherent judgment on performing each technique. Thus, it's necessary to be interested in the

efficient variable, which can provide us on the contribution of these two techniques in the consecration of these medalists. Thus, efficiency was estimated using the following indices:

1. Overall offensive effectiveness achieved by any medalist, during each Olympic tournament, is represented by the ratio of the sum of effective actions and the sum of attempted actions multiplied by one hundred (Janjaque, 2003).

$$I_1 = \frac{\sum \text{effective actions}}{\sum \text{attempted actions}} \cdot 100$$

2. Action effectiveness is the ratio of the total scores got by the sum of effective actions. This total score equals $3M+5M+7M+7M+10M$. M shows the number of effective actions; 3, 5, 7, and 10 are points' values of Koka, Yuko, Waza-ari, and an Ippon (Sterkowicz, 1998).

$$I_2 = \frac{\sum \text{scores obtained}}{\sum \text{effectives actions}}$$

3. Combat effectiveness is the ratio of the total scores got by the total combats observed. This total score equals $3M+5M+7M+7M+10M$. M shows the number of effective actions; 3, 5, 7, and 10 are points' values of Koka, Yuko, Waza-ari, and an Ippon (Adam et al., 2013).

$$I_3 = \frac{\sum \text{scores obtained}}{\sum \text{observed fights}}$$

Information regarding the height, age, and contests of these medalists were collected in Table 1. However, these judokas were characterized by similarity in age and height. The age of this analysis sample presented no significant difference ($Q(5.991) = 1.733$; $p = .420$). Their height was equivalent ($Q(5.991) = 2.000$; $p = .368$).

	Age			Height			Contest		
	Athens	Beijing	London	Athens	Beijing	London	Athens	Beijing	London
Gold	30	28	23	1.64	1.63	1.70	5	5	5
Silver	29	27	27	1.70	1.62	1.60	5	5	5
Bronze 1	20	29	26	1.69	1.65	1.60	5	5	5
Bronze 2	24	22	23	1.63	1.60	1.64	6	6	5
Mean	25.8	26.5	24.8	1.67	1.63	1.64	5.3	5.3	5.0
Standard Deviation	4.6	3.1	2.1	0.04	0.02	0.05	0.5	0.5	0.0

Table 1: Characteristics of Olympic medalists of the category (-60 kg).

3. Statistical analysis

Location parameters (mean) and dispersion indices (standard deviation) determine the value of the different variables characterizing the offensive activity using the classified and unclassified techniques of Olympic medalists. Correspondence analysis determines the preferred technical profile of each medalist at these three Olympic events. Non-parametric test for k Friedman paired samples with a significance level of 0.05 was used for the inter-Olympic comparison of the various variables involved in this offensive activity. The XLSTAT-Pro 7.5 software made all statistical calculations.

4. Results

4.1. Olympiad's offensive activity

Exclusive use of techniques classified as part of high-level judo is no longer possible. Offensive performance during the three Olympic events of the medalists of the category (-60 kg) was proof. Besides these used techniques, the offensive activity integrated unclassified techniques. Its share became important in the competitive Olympic medalists' system. Thus, the present study noted a variable contribution of each technique. Unclassified techniques dominated Athens and London, while classified techniques triumphed in Beijing (Figure 2).

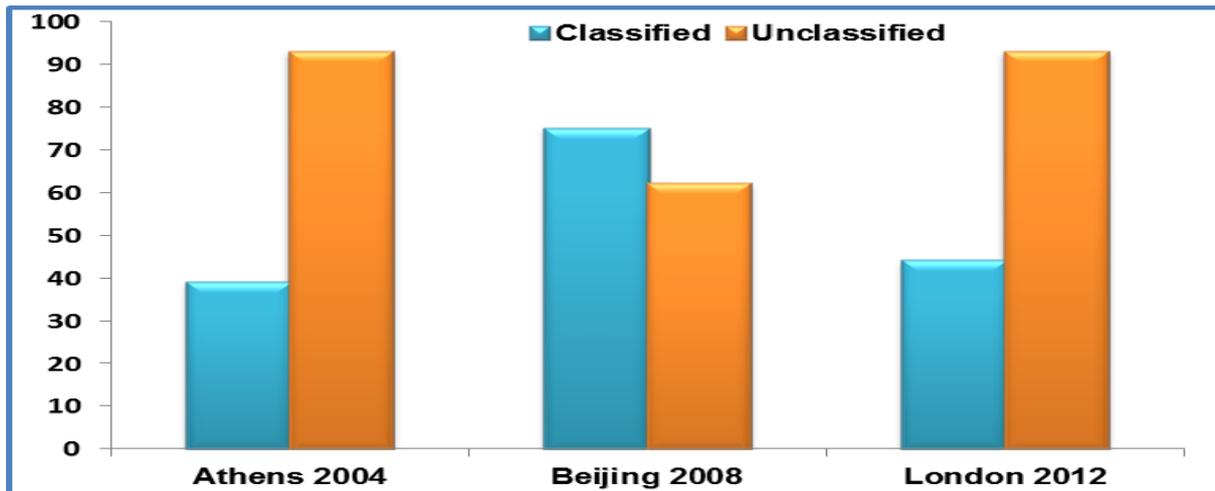


Figure 2: Frequency (%) of Classified and Unclassified techniques.

4.2. Medalists' offensive activity

Athens Olympic champion based his offensive activity on classified techniques. Other medalists preferred unclassified techniques. A change in a trend in technical preference took place among these medalists in Beijing. Gold medalist opted for unclassified techniques; Silver one integrated the two techniques. The two bronze medalists preferred classified techniques. In London, a new technical configuration emerged to replace the previous one. The winner of the tournament executed both techniques, but not the other medalists who used unclassified techniques (Table 2). On the use of unclassified actions by medalists in these three tournaments, Friedman's test did not confirm the significant difference ($Q(5.991) = 2.800$; $p = .247$). This test showed no significant difference in the classified techniques ($Q(5.991) = 2.000$; $p = .368$). The use by the Olympic medalists of the two techniques remained identical throughout these three events, which revealed stabilization in the number of attacks offensive activity.

	Classified Techniques			Unclassified Techniques		
	Athens	Beijing	London	Athens	Beijing	London
Gold	12	4	14	7	13	14
Silver	11	20	16	44	18	25
Bronze 1	5	15	11	21	10	18
Bronze 2	11	36	3	21	21	36
Mean	9.8	18.8	11.0	23.3	15.5	23.3
Standard Deviation	3.2	13.3	5.7	15.3	4.9	9.6

Table 2: Medalists Classified and Unclassified techniques frequencies.

4.3. Medalists' technical Profile

Chi² test determined a significant dependency between Olympic medalists and technical groups ($\chi^2 (43.773) = 104.397$; $p < 0.0001$). The first axis of the correspondence analysis identified an opposition between both Olympic champion and Bronze 2 medalist offensive profiles to Silver and Bronze 1 medalist ones. Thus, the offensive activity of the gold medalist comprised Te-waza in Beijing (TWB) and Koshi-waza in Athens (KWA). The bronze medalist 2 included Ashi-waza in Athens (AWA) and Te-waza in London (TWL). Silver medalist used Te-waza in Athens (TWA). Bronze 1 medalist favored Sutemi-waza in Athens (SWA) and Koshi-waza in London (KWL). The second axis mentioned a divergence of the techniques executed by the Silver medalist and the three other Olympic medalists. The Silver medalist adopted Sutemi-waza in Beijing (SWB) and Te-waza in Athens (TWA). In contrast, the bronze medalist 1 chose Sutemi-waza in Athens (SWA) and Koshi-waza in London (KWL). Bronze 2 medalist used Te-waza in London (TWL), Ashi-waza in Athens (AWA), and Koshi-waza in Beijing (KWB). Olympic champion preferred Te-waza in Beijing (TWB) and Koshi-waza in Athens (KWA). The four medalists integrated Sutemi-waza techniques in London (SWL) in their offensive activity (Figure 3).

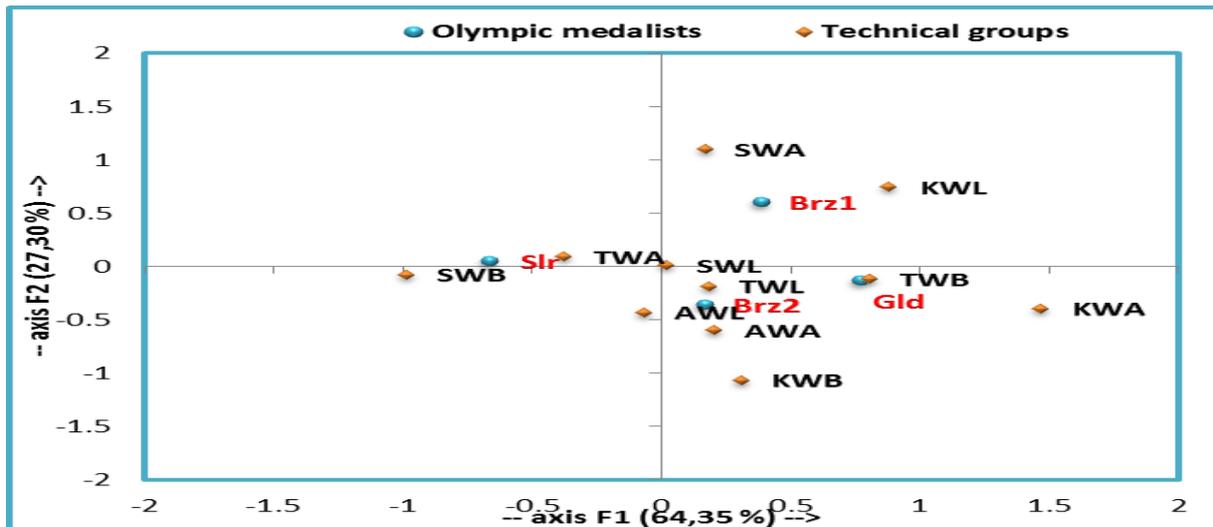


Figure 3: Correspondence Analysis of the unclassified techniques of the Olympic medalists: Gld (Gold), Slr (Silver), Br1 (Bronze 1), and Br2 (Bronze 2).

4.4. Medalists' technical repertoire

In Beijing, Bronze medalist 2 showcased all the extraordinary richness of his know-how thanks to a global repertoire of 19 techniques. At the same tournament, the Silver medalist mastered the poorest one with only 5 techniques (Table 3). There is some disparity in the technical width repertoires. Concerning the mastery of classified techniques, the Bronze medalist 2 exhibited know-how of 12 techniques, while Bronze 1 executed 2 techniques only. About the unclassified techniques, Bronze 2 once again performed 9 techniques, while the Silver medalist used 2 techniques. These Olympic medalists integrated as many classified as unclassified techniques into their various competitive courses to neutralize their opponents. On classified techniques, Friedman's test revealed no significant difference between its repertoires ($Q(5.991) = 1.500$; $p = .472$). The repertoires of unclassified techniques were identical. This test showed no significant difference between them ($Q(5.991) = 5.143$; $p = .076$). So, these Olympic medalists built their offensive activity based on an arsenal of classified and unclassified techniques similar throughout these events.

	Classified Techniques			Unclassified Techniques		
	Athens	Beijing	London	Athens	Beijing	London
Gold	7	4	8	6	6	8
Silver	5	3	9	8	2	7
Bronze 1	2	3	6	5	5	7
Bronze 2	8	12	3	8	7	9
Mean	5.5	5.5	6.5	6.8	5.0	7.8
Standard Deviation	2.6	4.4	2.6	1.5	2.2	1.0

Table 3: Medalists' technical repertoire.

4.5. Olympiad's effectiveness and scores

To launch a judo attack need precision, accuracy, and timing. The lack of one element prejudiced its effectiveness. The fundamental characteristic of judokas medalists, in comparison with other combatants, is the perfect mastery of these elements in contest situations. This allows them to take over their opponents while ensuring a high-level of effectiveness. Medalists performed their high efficiency of 37.5% of classified techniques in Beijing and their lowest 26.7% in Athens. Regarding unclassified techniques, medalists got their best effectiveness of 73.3% in Athens and the worst 62.5% in Beijing (Figure 4). Medalists produced $69.1 \pm 5.8\%$ of unclassified techniques and $30.9 \pm 5.8\%$ of classified techniques effectiveness. Preponderance is a direct consequence of scores got by these medalists. A great number of Ippon reveals its top quality of execution. The unclassified techniques expressed their best scores in Beijing with 85.7% Ippon; the classified techniques in London with 33.3% Ippon. Throughout these three Olympic tournaments, the unclassified techniques reveal their superiority thanks to a mean of $77.5 \pm 9.8\%$ Ippon per Olympiad against $22.5 \pm 9.8\%$ Ippon for the classified techniques. A similar pattern of dominance by these unclassified techniques is observed in the other scores (Table 4).

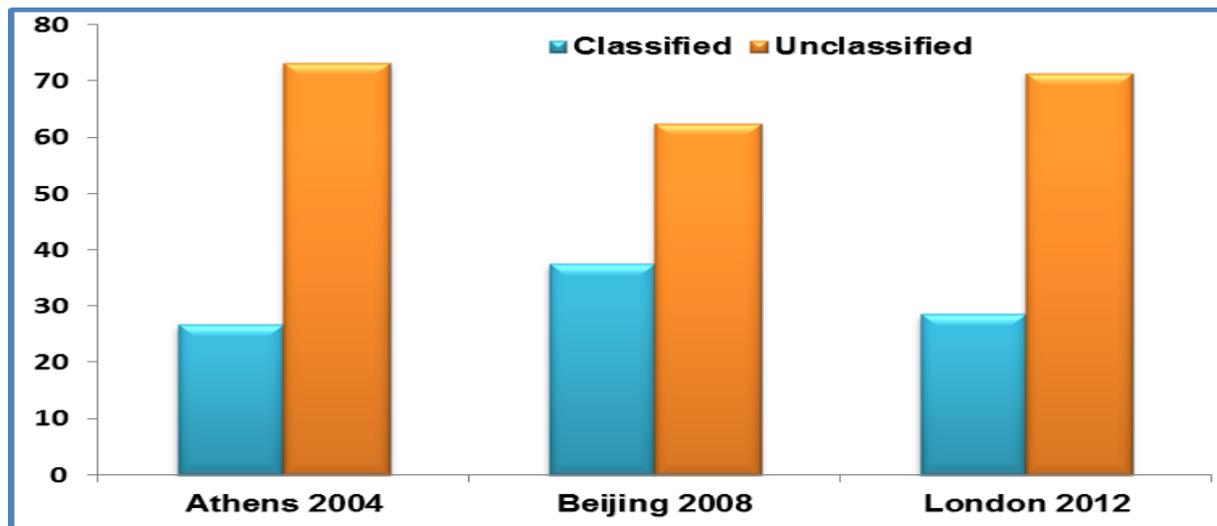


Figure 4: Effectiveness (%) of Classified and Unclassified techniques.

	Ippon		Waza-ari		Yuko		Koka	
	C	UC	C	UC	C	UC	C	UC
Athens	20.0	80.0	50.0	50.0	37.5	62.5	0.0	100.0
Beijing	14.3	85.7	0.0	100.0	33.3	66.7	80.0	20.0
London	33.3	66.7	42.9	57.1	12.5	87.5	0.0	0.0
Mean	22.5	77.5	31.0	69.0	27.8	72.2	26.7	40.0
Standard Deviation	9.8	9.8	27.1	27.0	13.4	13.4	46.2	52.9

Table 4: Scores (%) of techniques Classified (C) and Unclassified techniques (UC).

4.6. The global effectiveness of the medalists' offensive activity

The effectiveness of the classified and unclassified techniques performed during these tournaments expresses the quality of the Olympic medalists' combat know-how. Thus, the Olympic champion led Athens and Beijing by unclassified techniques effectiveness and London by classified techniques effectiveness. Silver medalist technical mastery was different. He had better-classified techniques effectiveness at Athens and London, and unclassified techniques effectiveness at Beijing. The two Bronze medalists got best-unclassified techniques effectiveness in Athens and

London, and the equality effectiveness of the two techniques in Beijing (Table 5). Friedman's test did not express any significant difference between these unclassified techniques' effectiveness ($Q(5.991) = .500$; $p = .779$). This test did not confirm any difference in the classified techniques' effectiveness ($Q(5.991) = 3.000$; $p = .223$). These effectiveness indices for both types of techniques remained stable for all medalists during these competitions and did not cause a major upheaval.

	Classified Techniques			Unclassified Techniques		
	Athens	Beijing	London	Athens	Beijing	London
Gold	25.0	25.0	14.3	42.9	30.8	7.1
Silver	27.3	0.0	25.0	15.9	16.7	20.0
Bronze 1	0.0	13.3	0.0	9.5	10.0	16.7
Bronze 2	18.2	8.3	0.0	47.6	9.5	16.7
Mean	17.6	11.7	9.8	29.0	16.7	15.1
Standard Deviation	12.4	10.5	12.2	19.1	9.9	5.5

Table 5: Classified and Unclassified techniques offensive effectiveness (I_1).

4.7. Medalists' actions effectiveness

In terms of effectiveness, the Olympic champion got more points for any classified action performed during these three tournaments. It is a sign of his top-quality execution. Unclassified techniques maintained this level of effectiveness in Athens and Beijing. Despite the victory, he lost this dominant position in London to the bronze medalist 1. The Olympic champion's technical virtuosity allowed him to get the best effectiveness. The two techniques had an identical effectiveness mean in Athens and Beijing. The superiority of the effectiveness of the unclassified technique mean produced by these medalists in London was obvious (Table 6). Unclassified techniques earned more points than classified techniques. Friedman's test did not show a significant difference in the unclassified techniques' effectiveness ($Q(5.991) = .500$; $p = .779$). Also, no significant difference in classified techniques effectiveness ($Q(5.991) = .933$; $p = .627$). The value in points justifying any effective action of the

opponent through classified and unclassified techniques remained stable throughout these three competitions.

	Classified Techniques			Unclassified Techniques		
	Athens	Beijing	London	Athens	Beijing	London
Gold	9.0	10.0	8.5	8.3	10.0	5.0
Silver	5.6	0.0	7.3	5.4	6.0	6.4
Bronze 1	0.0	4.0	0.0	7.5	5.0	9.0
Bronze 2	6.0	3.0	0.0	6.8	8.5	6.5
Mean	5.2	4.3	3.9	7.0	7.4	6.7
Standard Deviation	3.8	4.2	4.6	1.2	2.3	1.7

Table 6: Classified and Unclassified techniques effectiveness (I_2).

4.8. Medalists' contests effectiveness

The mean of points scored in each tournament by the unclassified techniques was evidence of their higher effectiveness. The Olympic champion made each contest effective using both techniques. Other medalists cannot claim such an achievement because of their lack of effectiveness sometimes observed in the classified techniques (Table 7). Friedman's test did not affirm any significant difference between the classified techniques values ($Q(5.991) = .933$; $p = .627$). No difference with unclassified techniques ($Q(5.991) = 2.000$; $p = .368$). The contest effectiveness thanks to the good realization of the two techniques that threw the various opponents remained without change during these three competitions.

	Classified Techniques			Unclassified Techniques		
	Athens	Beijing	London	Athens	Beijing	London
Gold	5.4	2.0	3.4	5.0	8.0	1.0
Silver	3.4	0.0	5.8	7.6	3.6	6.4
Bronze 1	0.0	1.6	0.0	3.0	1.0	5.4
Bronze 2	2.0	1.5	0.0	11.3	2.8	7.8
Mean	2.7	1.3	2.6	6.3	3.9	4.9
Standard Deviation	2.3	0.9	3.3	3.0	3.0	2.8

Table 7: Medalists' contests effectiveness (I_3).

5. Discussion

The judo competition system is developing thanks to the increase of major championships and international tournaments. This expansion contributes to the development of the technique and its variants, intending to improve the effectiveness of a judoka (Habersetzer, 1992). Besides these classified techniques, high-level judo executed unclassified techniques. The current analysis confirmed its use in these Olympic events. The interest of their integration responded to technical and tactical needs. These techniques propose solutions to accommodate the defensive difficulties encountered in the contests (Rosso et al., 2006). The refereeing amendments introduced by IJF justified the successive drop in their demand during these Olympiads. These refereeing injunctions changed the status of these techniques. Carried towards the attack, judokas transformed these skills into combination, nor counter-attack (International Judo Federation [IJF], 2009; 2010). Analysis of the 2009 and 2010 World Championships, the 2008 and 2009 Paris tournaments, and Tokyo 2010 corroborated this significant impact on the unclassified techniques' frequencies (Adam et al., 2011; Tamura et al., 2012; Ito et al., 2013). To mitigate the effect of these amendments, high-level judokas established new strategies adapting on tactical and technical ways to the recent rules (Ito et al., 2014).

Several studies confirmed the dominant adoption by lightweight categories of classified techniques from the Te-waza group (Franchini & Sterkowicz, 2003; Kruszewski et al., 2005; Boguszewski, 2010). The subjects of this analysis followed the same logic. They preferred unclassified techniques rather than those classified in this group. The bipedal stability, the increase of uncertainty, the diversity of the technical options, their great profitability, and the stature of the judokas are as many reasons which allow arguing the choice of these techniques by the medalists of this weight category. Domination of this group resembled that recorded in Beijing and London Olympics by the medalists of the category (-81 kg) (Ait Ali Yahia, 2014b). Regardless of Te-waza, these medalists also rely on those of Sutemi-waza. Inman (2005) confirmed the supremacy of Te-waza over Sutemi-waza in the Athens Olympic Games. Medalists solicited Ashi-waza and Koshi-waza in the London Olympic Games only. Their interest in these skills remained insignificant. Ashi-waza and Koshi-waza structure was an obstacle to encouraging the development of new techniques.

To compete with the effective defensive systems encountered during their confrontations, Olympic medalists must have the widest individual technical repertoire. This width provides information on technical mastery these medalists showed during their competition. This technical repertoire integrated classified techniques resulting from their learning process, research, and creativity. Judo is a technical discipline; the expert judoka must increase more and more its gestural repertoire. Having adequate solutions allows him to adapt to the multiple problems encountered in competition. The quality of this repertoire, incorporating unconventional motor solutions, shows the level of technical know-how to get for any high-level judoka wishing to express efficiently. It is also a need for achievement. It is not without reason that its crucial role in the offensive mechanism is underlined, but also the resulting defensive consequences. Thus, Rosso et al. (2006) confirmed that “the more the opponent has an extended offensive repertoire, the more delicate it is to limit its expression”. This suggests that any offensive activity produced by elite judoka depends, in the first place, on the value of its technical repertoire. On this subject, Gaudin (2009) was categorical in reminding us that “sport cannot be blamed for its lack of effectiveness; victory is even its only goal. So, it can be blamed for its

poverty between gestures mobilized or a lack of aesthetics. On the other side, the repertoire expressed of techniques classified by these medalists during these three Olympiads marked certain stagnation. Its value was close to the Olympic and world champions identified by Weers (1997) with six techniques.

The low proportion of non-classical solutions determined by previous studies indicated little interest shown by judokas. Several reasons can justify this lack of solicitation. The primary reason for this deliberate neglect was the classified techniques' importance in their offensive posture. The level of defensive systems was another argument that did not favor their emergence. Although showing their frequencies, these studies are criticized for their lack of information about the impact of these unclassified techniques (Sterkowicz & Maslej, 1999; Sterkowicz & Franchini, 2000). Also, only the first study notified their effectiveness. It was later confirmed by the offensive activity of the medalists of the category (-81 kg) in Beijing and London (Ait Ali Yahia, 2014b). The effectiveness tested by the various indices, in the light of the present study, proved its broad superiority over that of classified techniques. This justified their preponderant place within the offensive activity of these Olympic medalists. But, the increasing complexity of modern judo is an encouraging factor for their massive incorporation. Because of their identification, this established effectiveness allows these unclassified techniques, a possibility of transmissibility and a probable integration in training and preparation of high-level judokas.

6. Conclusion

The podium of the Olympic medalists of the category (-60 kg) was a direct consequence of the perfect combination of the two techniques. Although technical and tactical considerations were obvious, the repertoire is an indicator justifying the actual integration of unclassified techniques into the offensive activity of this weight category. This analysis corroborated their place in offensive activity and their impact on performing these medalists. Their performance was higher than the classified techniques. Te-waza group proved, because of its potential, its decisive place in this offensive activity.

In the competitive world of combat sports, judo must adapt to this reality and find adequate means to safeguard its dominant position achieved since its admission to the 1964 Olympic Games. To appear of new over mediated combat sports like MMA (Mixed Martial Art) was dangerous and can, in the long run, harm it. That is why its interest is paramount and these techniques must in no way be felt as a threat by decision-makers who remain faithful to the spirit of its creator Jigoro Kano. Thus, official recognition would ensure their legal use in competition and would forever rid them of this status of unauthorized techniques. Closing the door is not the solution. It would threaten the judo's sustainability. Even the toughening of the refereeing arsenal did not alter their existence. Reframing this creativity following the rules in force remains the only guarantee of security to safeguard its very essence. The updating of the official classifications would be an absolute necessity because of the growing interest of these techniques not classified in the current judo (British Judo Association [BJA], 2012).

No research, whatever its purpose, can claim to be exhaustive, let alone ours, which had some obvious material limitations because of the study of a single weight category. So, to reinforce this indisputable role of unclassified techniques in getting the results of high-level judokas, an experimental approach extended to all weight categories is required. Here, the existence of Teddy Riner's "rotten-waza" and similar techniques performed by other medalists in other categories should challenge us so as not to hide them.

7. Glossary:

Classified techniques: Judo techniques listed in official classifications (FIJ, Kodokan, etc.).

Unclassified Techniques: Judo techniques performed in high-level competition but not included in official classifications.

Nage-waza: Throwing techniques performed by the judoka in standing position (Tashi-waza) or lying down on the ground (Sutemi-waza).

Ne-waza: Techniques executed by Judoka on the ground integrating immobilization (Osaekomi-waza), joint locks (Kansetsu-waza) and strangulation (Shime-waza).

Kinshi-waza: Techniques prohibited in competition on the grounds that they may harm the physical integrity of the opponent.

Kokusai-shiai-waza: Unofficial combat techniques observed at the international level.

Te-waza: Throwing techniques performed with the hand or arm.

Ashi-waza: Throwing techniques performed using the leg or foot.

Koshi-waza: Throwing techniques performed using the hip.

Sutemi-waza: Throwing techniques performed by sacrificing the balance of the attacking judoka's body forward (Ma-sutemi-waza) or sideways (Yoko-sutemi-waza).

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